providing a semiconductor film on an insulating surface;

providing at least part of the semiconductor film with a catalyst metal-containing material;

crystallizing said semiconductor film in a way that causes said catalyst metal to diffuse through the semiconductor film and function to promote a crystallization of a material of the semiconductor film;

forming a gettering layer in contact with said semiconductor film after the crystallization, said gettering layer including phosphorous; and

thermally annealing said semiconductor film and said gettering layer at a temperature not lower than 500°C in order to getter the catalyst metal in said semiconductor film using said gettering layer.

27. A method according to claim 26 wherein said semiconductor device is a photoelectric conversion device.

28. A method according to claim 26 wherein said thermally annealing is continued for 1-4 hours.

29. A method according to claim 26 wherein said gettering layer comprises a phosphorous silicate glass containing phosphorous at a concentration of 1 to 30 wt%.

30. A method according to claim 26 wherein said gettering layer comprises silicon containing phosphorous at a concentration of 0.1 to 10 wt%.

31. A method according to claim 26 wherein said thermal annealing is conducted at a temperature not higher than 800°C.

32. A method according to claim 26 wherein said catalyst metal is selected from the group consisting of Ni, Fe, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

33. A method according to claim 26 further comprising a step of removing said gettering layer after the gettering.

34. A method of manufacturing a semiconductor device comprising:

providing a substantially intrinsic semiconductor film on an insulating surface, said semiconductor film comprising silicon doped with boron at a concentration of 0.001 - 0.1 atm%;

providing at least a part of said semiconductor film with a catalyst metal-containing material;

crystallizing said semiconductor film in a way that causes said catalyst metal to diffuse through the semiconductor film and functions to promote a crystallization of said semiconductor film;

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forming a gettering layer in contact with said semiconductor film after the crystallization, said gettering layer including phosphorous; and

thermally annealing said semiconductor film and said gettering layer in order to getter the catalyst metal in said semiconductor film by said gettering layer.

35. A method according to claim 34 wherein said semiconductor device is a photoelectric conversion device.

36. A method according to claim 34 wherein said thermal annealing is continued for 1-4 hours.

37. A method according to claim 34 wherein said gettering layer comprises a phosphorous silicate glass containing phosphorous at a concentration of 1 to 30 wt%.

38. A method according to claim 34 wherein said gettering layer comprises silicon containing phosphorous at a concentration of 0.1 to 10 wt%.

39. A method according to claim 34 wherein said catalyst metal is selected from the group consisting of Ni, Fe, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

40. A method according to claim 34 further comprising a step of removing said gettering layer after the gettering.

41. A method according to claim 34 wherein said thermal annealing is conducted within a temperature from 500°C to 800°C.

42. A method of manufacturing a semiconductor device comprising:

providing a semiconductor film on an insulating surface;

providing a catalyst metal-containing material on at least part of said semiconductor film;

crystallizing said semiconductor film in a way that causes said catalyst metal to diffuse through the semiconductor film and function to promote a crystallization of said semiconductor film;

forming a gettering layer in contact with said semiconductor film after the crystallization, said gettering layer including phosphorous; and

thermally annealing said semiconductor film and said gettering layer in a nitrogen atmosphere in order to getter the catalyst metal contained in said semiconductor film by said gettering layer.

43. A method according to claim 42 wherein said semiconductor device is a photoelectric conversion device.

44. A method according to claim 42 wherein said thermal annealing is continued for 1-4 hours.

45. A method according to claim 42 wherein said gettering layer comprises a phosphorous silicate glass containing phosphorous at a concentration of 1 to 30 wt%.

46. A method according to claim 42 wherein said gettering layer comprises silicon containing phosphorous at a concentration of 0.1 to 10 wt%.

47. A method according to claim 42 wherein said semiconductor film comprises silicon.

48. A method according to claim 42 wherein said catalyst metal is selected from the group consisting of Ni, Fe, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

49. A method according to claim 42 further comprising a step of removing said gettering layer after the gettering.

50. A method according to claim 42 wherein said thermal annealing is conducted within a temperature from 500°C to 800°C.

51. A method of manufacturing a semiconductor device having a intrinsic to doped junction, said method comprising:

providing a semiconductor film comprising amorphous silicon on an insulating surface;

providing a catalyst metal-containing material on at least part of said semiconductor film;

crystallizing said semiconductor film by heating in a way that causes said metal to diffuse through the semiconductor film and to promote a crystallization thereof;

forming a gettering layer in contact with said semiconductor film after the crystallization;

thermally annealing said semiconductor film and said gettering layer at a temperature not lower than 500°C in order to getter the metal included in said semiconductor film by said gettering layer; and

forming a doped silicon film on said semiconductor film to form an intrinsic to doped junction.

52. A method according to claim 51 wherein said semiconductor device is a photoelectric conversion device.

53. A method according to claim 51 wherein said thermally annealing is continued for 1-4 hours.

54. A method according to claim 51 wherein said gettering layer comprises a phosphorous silicate glass containing phosphorous at a concentration of 1 to 30 wt%.

55. A method according to claim 51 wherein said gettering layer comprises silicon containing phosphorous at a concentration of 0.1 to 10 wt%.

56. A method according to claim 51 wherein said thermal annealing is conducted at a temperature not higher than 800°C.

57. A method according to claim 51 wherein said catalyst metal is selected from the group consisting of Ni, Fe, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

58. A method according to claim 51 further comprising a step of removing said gettering layer after the gettering.

59. A method of manufacturing a semiconductor device having a doped to intrinsic junction, said method comprising:

providing a substantially intrinsic semiconductor film on an insulating surface, said semiconductor film comprising amorphous silicon doped with boron at a concentration of 0.0001 - 0.1 atm%;

providing a catalyst metal at least partly on said semiconductor material;

crystallizing said semiconductor film by heating to cause said catalyst metal to diffuse through the semiconductor film and to promote a crystallization of said semiconductor film;

forming a gettering layer in contact with said semiconductor film after the crystallization thereof;

thermally annealing said semiconductor film and said gettering layer in order to getter the catalyst metal in said semiconductor film by said gettering layer; and

forming a doped to intrinsic junction using said intrinsic semiconductor film.

60. A method according to claim 59 wherein said semiconductor device is a photoelectric conversion device.

61. A method according to claim 59 wherein said thermal annealing is continued for 1-4 hours.

62. A method according to claim 59 wherein said gettering layer comprises a phosphorous silicate glass containing phosphorous at a concentration of 1 to 30 wt%.

63. A method according to claim 59 wherein said gettering layer comprises silicon containing phosphorous at a concentration of 0.1 to 10 wt%.

64. A method according to claim 59 wherein said catalyst metal is selected from the group consisting of Ni, Fe, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

65. A method according to claim 59 further comprising a step of removing said gettering layer after the gettering.

66. A method according to claim 59 wherein said thermal annealing is conducted within a temperature from 500°C to 800°C.

67. A method of manufacturing a semiconductor device having a doped to intrinsic junction, said method comprising:

providing a semiconductor film comprising amorphous silicon formed on an insulating surface;

providing a catalyst metal-containing material at least partly on said semiconductor film;

crystallizing said semiconductor film by heating in a way that causes said catalyst metal to diffuse through the semiconductor film and function to promote the crystallization of said semiconductor film;

forming a gettering layer in contact with said semiconductor film after the crystallization; and

thermally annealing said semiconductor film and said gettering layer in a nitrogen atmosphere in order to getter the catalyst metal contained in said semiconductor film by said gettering layer; and

forming an intrinsic-to-doped junction on said semiconductor film.

68. A method according to claim 67 wherein said semiconductor device is a photoelectric conversion device.

69. A method according to claim 67 wherein said thermal annealing is continued for 1-4 hours.

70. A method according to claim 67 wherein said gettering layer comprises a phosphorous silicate glass containing phosphorous at a concentration of 1 to 30 wt%.

71. A method according to claim 67 wherein said gettering layer comprises silicon containing phosphorous at a concentration of 0.1 to 10 wt%.

72. A method according to claim 67 wherein said semiconductor film comprises silicon.

73. A method according to claim 67 wherein said catalyst metal is selected from the group consisting of Ni, Fe, Co, Ru, Rh, Pd, Os, Ir, Pt, Cu and Au.

74. A method according to claim 67 further comprising a step of removing said gettering layer after the gettering.

75. A method according to claim 67 wherein said thermal annealing is conducted within a temperature from 500°C to 800°C.

76. A method of manufacturing a semiconductor device, comprising:

providing a semiconductor film on a substrate;

forming a catalyst metal-containing material, said catalyst being a material which facilitates crystallization of said semiconductor film to be formed more easily, but which when present in a final product of the semiconductor device will degrade operation of the semiconductor device;

crystallizing said semiconductor film in a way that causes said catalyst metal-containing material to diffuse into at

least a part of the semiconductor film, said catalyst metal containing material when so diffused functioning to facilitate said crystallization;

forming a further processing layer in contact with said semiconductor film, said further processing layer including a material that reduces a concentration of said catalyst metal-containing material; and

processing said semiconductor film and said further processing layer to reduce a concentration of said catalyst metal in said semiconductor film.

77. A method as in claim 76, wherein said further processing layer includes phosphorous.

78. A method as in claim 76, wherein said metal includes Nickel.

79. A method as in claim 76, wherein said catalyst material allows said crystallization to occur at a lower temperature.

80. A method as in claim 76, wherein said further processing layer is a gettering layer. --